

SOCIALCARBON REPORT

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1. Identifying the Project

Basic Information	
Indicators	Version used for the diagnosis and for completing the report: Santa Catarina Composting Project Indicators.
Project Name	Santa Catarina Composting Project
Diagnostic	Enterprise
Year-Point of Project	Zero
Monitoring period (SOCIALCARBON)	January 01 st , 2012 to December 31 st , 2012
Version + Date of report completion	Version 03 September 16 th , 2013
Corresponding Monitoring Report (Carbon Accounting Standard)	1º MR (2011/2012)
Location	Santa Catarina State, Brazil.

Identifying the Researcher	
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Identifying the Project Developers

ID	Farm Name	Property	Address	Town	Contact	Phone	Global Positioning System*	
							S	W
1	Fazenda Sitio Pickler	Adelmo Pickler	Linha São Roque, S/N	Arroio Trinta	Adelmo Pickler	(49) 3535-1138 (49) 9154-3808	-26.905787°	-51.302095°
2	Fazenda Altenor	Altenor José Basso	Linha Pinheirinho, S/N	Nova Erechim	Altenor José Basso	(49) 3333-0122 (49) 8804-3583	-26.913729°	-52.932355°
3	Fazenda Ramela	Antônio Carlos Ramela	Linha Barreiros, S/N	Herval d'Oeste	Antônio Carlos Ramela	(49) 3554 0692	-27.187098°	-51.395069°
4	Sítio Santa Lucia	Belmiro Secco	Linha Banhado Grande, S/N	Jaborá	Clodoaldo Secco	(49) 3525-1196	-27.128526°	-51.688554°
5	Fazenda Helena	Diacir Coradi	Linha Santo Antônio, S/N	Vargeão	Diacir Coradi	(49) 3434-0447 (49) 9979-8651	-26.905891°	-52.145477°
6	Fazenda Gilmar	Gilmar José Sinigaglia	Linha Pedreira, S/N	Rio das Antas	Gilmar José Sinigaglia	(49) 9134-1119	-26.916379°	-51.083891°
7	Fazenda Suruvy	Airton Piovezan	Linha Rui Barbosa, S/N	Concórdia	Gilmar Piovezan	(49) 3425-8001	-27.308228°	-52.068764°
8	Fazenda Granja Silva	Jair da Silva	Linha Gomercindo, S/N	Concórdia	Jair da Silva	(49) 3442-8484	-27.293422°	-51.900758°
9	Fazenda Colônia Suspiro	NóbileTomazi	Linha Pinheirinho, S/N	Nova Erechim	LenizeTomazi	(49) 8860-0650	-26.903279°	-52.931321°
10	Fazenda Colônia Zuffo	Dario Marcos Zuffo	Linha Vista Alegre, S/N	Rio das Antas	Dario Marcos Zuffo	(49) 3564-2044	-26.974623°	-51.068915°
11	Fazenda Pissaia	Neimar Pissaia	Linha Chapada, S/N	Arvoredo	Neimar Pissaia	(49) 3356-3560	-27.108491°	-52.411704°
12	Fazenda Baccin	Renato Baccin	Linha 24 de Fevereiro, S/N	Concórdia	Renato Baccin	(49) 9109-0087 (49) 3442-2208	-27.169646°	-52.103517°
13	Fazenda Andretta	Silvino Andretta	Linha Amizade, S/N	Nova Itaberaba	Fabiana Andretta	(49) 3327-0076	-26.934749°	-52.833069°

*All GPS coordinates were taken on the location where the composting machines are installed.

2. General description of the reduction of GHG emissions Project activity

2.1. Context and history of the reduction of GHG emissions project

- **Brazilian Swine Farm Activity**

Brazil is the fourth country in the world to export swine meat. During 2011, 40 thousand swine farmers produced 3.4 million tons of pork, generating 600 thousand jobs. This sector is responsible for the economical and social development of various cities of Brazil (ABIEPCS, 2011)¹. Practically, half of Brazilian pig herd are concentrated in the South of Brazil and Santa Catarina State is the one with the largest pig herd and presents the greater number of heads per unit area (A.C.C.S. 2013).²

The farms are mostly agro small family farm. The families are part of an integrated production system which is a partnership between the swine farmers and industries (integrators). The producers are responsible for installations and the manpower necessary for the production and the industries provide the animals, veterinary, among other things.

All farms in the project have their production destined to industries. According to the Report of the Brazilian Association of Producers and Exporters of Swine Meat, most of pig farms in the country have the same type of production. In the year of 2008 from the total production of 3,029 tons of swine only 342 thousand tons were destined to subsistence (ABIEPCS, 2008).³ Another characteristic of swine farms is that all farms in the project have intensive production and all animals are kept in confinement.

In the year of 2011 the production of swine meat in Brazil was 3,362 thousand tons. Swine meat per capita was 15.1 kg/person/year and the average price paid to producers in 2012 was BRL 2.22 per kilo of live pig. The top five destinations for Brazilian exports of pork were: Ukraine, Hong Kong, Russia, Singapore and Angola⁴.



Picture 1. Mr. Dário Zuffo and his family, swine farmer included in the project

¹ ABIEPCS. Associação Brasileira da Indústria Produtora e Exportadora de Carne Suína. Relatório ABIEPCS, 2011. Available at: http://www.abiepcs.org.br/uploads/relatorios/relatorios-associados/ABIEPCS_relatorio_2011_pt.pdf. Link last visited on: April, 2013.

² A.C.C.S. Associação Catarinense de Criadores de Suínos. Histórico da suinocultura. Available at: http://www.accs.org.br/dados_ver.php?id=2. Link last visited on: April, 2013.

³ ABIEPCS. Associação Brasileira da Indústria Produtora e Exportadora de Carne Suína. Relatório ABIEPCS, 2008. Available at: http://www.abiepcs.org.br/uploads/relatorios/relatorios-associados/rela2008_P.pdf. Link last visited on: April, 2013.

⁴ A.C.C.S. Associação Catarinense de Criadores de Suínos. Números finais da carne suína no Brasil. Available at: http://www.accs.org.br/dados_ver.php?id=4. Link last visited on: April, 2013.

- **Characteristics of the Santa Catarina Composting Project**

Sustainable Carbon - Projetos Ambientais Ltda is developing a sustainability program along with 13 swine confinement farms in Brazil (one swine farmer, Adelmo Pickler, for personal reasons is not included in this current credit period), aiming to improve animal manure management systems, reduce greenhouse gases (GHG) emissions and improving the living conditions of the population on the project sites. The purpose of this project is to reduce GHG emissions associated to swine waste management and to contribute to sustainable development.

The project activity will be implemented in the municipalities of *Arroio Trinta*, *Nova Erechim*, *Herval d'Oeste*, *Jaborá*, *Vargeão*, *Rio das Antas*, *Concórdia*, *Arvoredo* and *Nova Itaberaba*, as showed in the figure below:

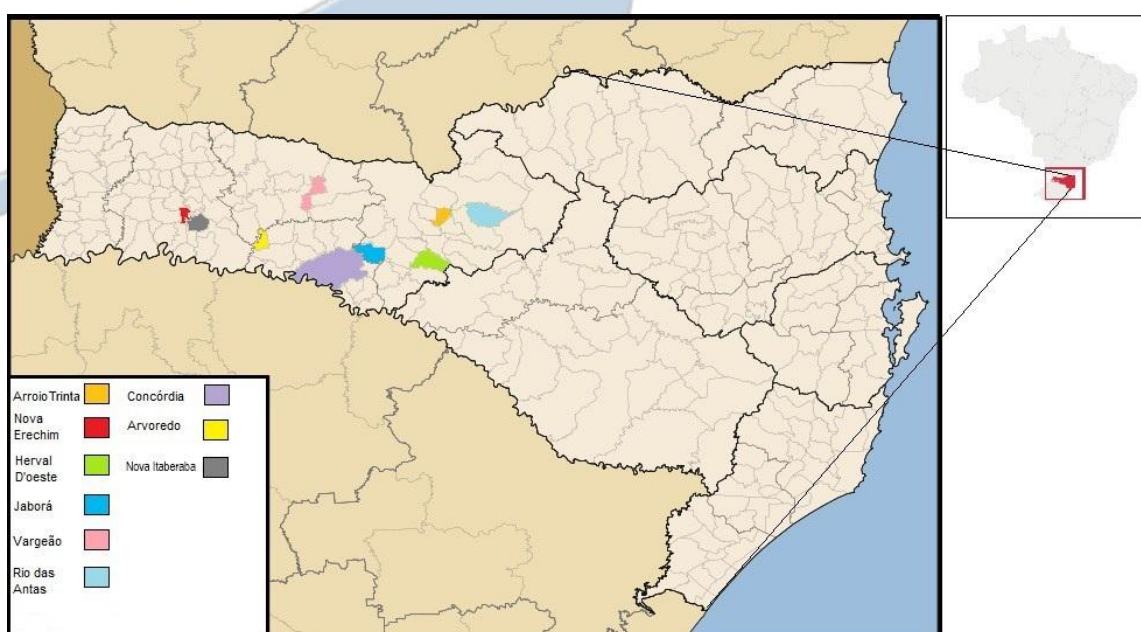


Figure 1. Location of the farms participating in the project activity.

The project proposes to replace the baseline Animal Waste Management Systems (AWMS) by a lower-GHG emitting AWMS. All farms are located in the state of Santa Catarina, in the southern region of Brazil.

According to the First Brazilian Inventory of anthropogenic GHG emissions from the Ministry of Science and Technology and EMBRAPA⁵, the Brazilian swine manure systems can be divided into two distinct groups. The first group (occurring mainly in the states of São Paulo, Goiás and Mato Grosso) with large farms, over one thousand swine and usually treatment systems that consist of a series of stabilization lagoons and, in some cases, partly digested waste spray. And the second group (occurring mainly in the west of the state of Santa Catarina, state of Paraná and northwest of the state of Rio Grande do Sul), with small farms,

⁵ First Brazilian Inventory of anthropogenic GHG emissions. Ministry of Science and Technology and EMBRAPA. Available at: <http://www.mct.gov.br/upd_blob/0005/5206.pdf>. Last visit on: 05/01/2012.

distributed as follows: small (up to 100 swine), medium (100 to 300 swine) and large (over 300 swine).

The treatment system commonly used is the open tank (single anaerobic lagoon), with a retention time that varies from 20 to 90 days. After that period it's applied to the soil on site or in neighboring areas, as illustrated by the picture below.



Picture 2. Swine manure being applied to the soil

According to the Normative Instruction nº 11 (IN 11) of FATMA⁶ (Fundação do Meio Ambiente), the environmental authority in the State of Santa Catarina, swine manure must be stored for at least 120 days in anaerobic lagoons, in farms where there is no other waste treatment system. Following the applicable law, swine farms are not obligated to change their current swine manure system.

As demonstrated previously, it can be concluded that the project faces difficulties concerning both the current lack of more rigorous legislation and the common practices in the region. Therefore, without the incentive of the carbon credits, the farms involved in the project would install or maintain anaerobic lagoons to treat manure, instead of the installing a mechanized composting system. This scenario would ensure compliance with local regulations, but would result in higher GHG emissions.

Anaerobic lagoons are significantly more economically attractive than the AWMS proposed by the project activity and were already built in accordance with Santa Catarina environmental law in Brownfield farms. Even where there is the need for further investments, anaerobic lagoons would be more economically attractive, since the investment is lower than the costs for the new AWMS.

⁶ Normative instruction available at:
<http://www.fatma.sc.gov.br/images/stories/Instrucao%20Normativa/IN%2011/in_11.pdf>. Last visit on 22/03/2012.

Alterations and adaptations in the production line were necessary in order to end the use of anaerobic lagoons and start to use the composting technology. It is estimated that the project will reduce **126,421** tons equivalent of CO₂ in a period of ten years.

2.2. Activities and methodology used for reduction/capture of GHGs

The emission reductions were determined according to:

- **Category AMS-III.F. - “Avoidance of methane emissions through composting”, version 10.**

Calculations of baseline emissions were determined using relevant sections of:

- **Category AMS-III.D. - “Methane recovery in animal manure management systems”, version 18.**

Procedures for the emission calculation from electricity consumption were determined according to:

- **Category AMS-I.D. - “Grid connected renewable electricity generation”, version 17.**

2.3. Social, economic and environmental impacts of the emission reductions project

The table below shows the major social, economical, and environmental impacts of the swine farm activity. The relevant environmental impacts, which are specifically related to the emission reductions, are described at the Project Description, in the section of Environmental Impacts.

Table 1: Main social, economical and environmental impacts

Activity	Aspect	Impact	Impacts Classification		Comments/Observations
			Positive	Negative	
Aerobic decomposition during composting	Reduction of GHG emissions and Hydrogen Sulfide	- Changes in air quality - Reduction of smell due to decomposition	X		Carbon Resource: - Project Performance Technology Resource: - Maintenance of Composting site
Aerobic decomposition during composting	Reduction of Liquid Waste	- Reduction of smells - Reduction of diseases agents - Reduction of soil pollution	X		Technology Resource: - Maintenance of Composting site - Compost Quality Natural Resource: - Physical and chemical analysis

		- Reduction of water pollution - Possibility of increasing animal production - Benefits for stakeholders			of the compost Human Resource: - Diseases Agents Financial Resource: - Number of animals
Aerobic decomposition during composting	Production of minerals and water	Generation of compost	X		Financial Resource: - Generation and commercialization of compost
Carbon Project Credits	Commercialization of the credits	- Income generation for families involved in the project	X		Financial Resource: - Commercialization of carbon credits
Aerobic decomposition during composting	Technology changes for treating swine wastes	- Less leaching and percolation into water bodies - Diffusion of technology - Reduction of Health Risks for humans and animals	X		Human Resource: - Control of microorganism Natural Resource: - Physical and chemical analysis of the compost Technology Resource: - Compost Quality - Technology Diffusion

Aerobic decomposition during composting	Addition of value to the final product	- Income generation for families involved in the project	X		Financial Resource: - Generation and commercialization of the compost - Income generation due to carbon credits Social Resource: - Satisfaction of small farmers - Economic dependency
Installation of a mechanized composting system	Costs of the installation and substratum	- Demand of financial investments		X	Financial Resource: - Credit
Composting project	Third part validation and verification	- Rigidity during evaluation of Brazilian legislation	X		Carbon Resource: - Validation/Verification Natural Resource: - Environmental Legislation
Composting project	Empowerment	- Increase of autonomy for swine units(farms)	X		Social Resource: - Association/Cooperative

					- Economic Dependency
Composting project	Application of Social Carbon Methodology	- Incitement to better practices - Stakeholders consultation	X		Human Resource: - Health and Safety Practices Natural Resource: - Environmental Management Carbon Resource: - Technological diffusion - Stakeholders consultation

2.4. Method used for obtaining information

The method used in the application of the SOCIALCARBON Standard indicators was carried through as follows:

Stage 01: Elaboration of a questionnaire.

Stage 02: Visit *in loco* at the swine farmers.

Stage 03: During the visit *in loco*, the questionnaire was conducted by the people responsible for carrying out the SOCIALCARBON Methodology. It was completed by conducting semi-structured interviews with the participants listed below. The questionnaires aimed to obtain information about the six resources of the SOCIALCARBON Standard.

Stage 04: Obtainment of evidence during the visit, such as interviews, pictures and documents.

2.5. Actors involved

The following key representatives were identified and selected for participating in the diagnosis:

Table 2. Participants List

Relation of Participants	
Name	Function/Job
Airton Piovezan	Swine farmer
Fabiana Andretta	Swine farmer's daughter
Leonice Oneda Baccin	Swine farmer's wife
Altenor Basso	Swine farmer
Everaldo Secco	Swine farmer
Elenilce Saretto Coradi	Swine farmer's wife
Daltro Tonigas	Swine farm worker
Jair da Silva	Swine farmer
Elaine Castilhos Gates Zuffo	Swine farmer's wife
Lenise Tomazzi	Swine farmer daughter
Antônio Ramella	Swine farmer
Neimar Pissaia	Swine farmer

3. Results

3.1. Social Resources

- 1. Association and Cooperatives:** Evaluates if the swine farmer is involved in sector associations or cooperatives.

Association: Group of two or more people that are organized for defending common interests, nonprofit with a legal personality (IE, 2011).

Cooperative: Organization of, at least, seven physical people, united through cooperation and mutual support, with democratic and participative management, with common social and economic goals, which legal aspects are distinct from other societies (IE, 2011).

The twelve swine farmers showed involvement with local associations and cooperatives, however only four swine producers have active participation. It was possible to observe that all the swine farmers believe that the associations and cooperatives generate some benefit to the farm, however it is sporadic.

The mainly organizations that the swine farmers are involved:

- Neighborhood associations: Aims to solve community problems;
- Copérdia: Guarantees the purchase of swine to the integrators.
- Cooperalfa: Aims to improve the quality of life of rural families, improve the work and the production and provide knowledge about new techniques and technologies.
- SICOOB Credial: Provides financial assistance to members.

Absence of associations or cooperatives; individualism is predominant.	There are associations and cooperatives in the region, though the swine farmer is not involved in any of them.	The swine farmer is involved in associations or cooperatives, though it was observed internal conflicts and/or lack of structure among these organizations.	The swine farmer is involved in associations or cooperatives, though his participation is not active.	The swine farmer is actively involved in associations and cooperatives.	In addition to the last item, the participation in associations or cooperatives resulted in positive benefits for the farmer's business.
Index: 4.33 (four-point-thirty-three)					

- 2. Economic Dependency:** Evaluates financial dependency of the swine farmer regarding his production, as well as the income generated by new activities introduced due to the compost production.

Among the twelve swine farmers, seven do not have profit with the swine activity. However, all of them practice subsistence and other activities that generates income, such as:

- Milk Production;
- Cattle;
- Crop cultivation;
- Aviary;
- Vegetable garden;
- Fruits.

Just one producer, reached index score 6 because he has soy crop, corn crop, wheat crop and aviary.

The farmer relies only on the swine production and this activity brought him injuries.	The farmer relies only on the swine production and this activity brought him financial instability (some months the performance brought injuries and others, incomes).	The swine production is not generating profit and carries on: - Subsistence activities; OR - Depend on another economic activity.	The swine farmer relies on swine production, which is not generating profit and carries on: - Subsistence activities; AND - Depend on another economic activity.	The swine farmer relies on swine production, which is generating profit, and carries on: - Subsistence activities; OR - Depend on another economic activity.	The swine farmer relies on more than two economic activities (in addition to the swine production).
Index: 4.45 (four-point-forty-five)					

3. Farmer Satisfaction: Evaluates the satisfaction of the farmer regarding the GHG emissions reduction project.

The majority of the swine farmers are satisfied with the composting activity especially due to the technology be a solution to the swine waste and reduce the environmental impacts. Just one of the swine farmers is not satisfied with the composting activities and the carbon project, because he did not observe benefits, just difficulties.

In relation to the carbon project, all the producers are indifferent because the project did not generate income yet. However, they have positive expectation in relation to the financial return of the carbon credits.

The swine farmer is not satisfied at all and is planning to quit: - The composting activity, AND - The carbon markets.	The swine farmer is not satisfied at all and is planning to quit: - The composting activity, OR - The carbon markets.	The swine farmer is indifferent to the composting and/or the carbon Project.	The swine farmer is satisfied with composting, but it was observed difficulty to apply to carbon markets.	The swine farmer is satisfied with the carbon Project and composting.	In addition to the last item, the swine farmer shares his experience and support with other farmers to use the same technology.
Index: 3.75 (three-point-seventy-five)					

3.2. Human Resource

4. Control of microorganisms: Evaluates biological characteristics of the compost regarding risks for human, animal and environmental health. The parameters evaluated are the presence and amount of the following: total amount of coliforms (bacteria that indicates contamination of the compost- CT), faeces coliform (bacteria commonly found in faeces- CF), faeces streptococcus (EF) and Salmonella (EMBRAPA, 2007; EMBRAPA, 2008).					
None of the swine farms did biological analysis of the characteristics of the compost generated.					
There is no concern in undertaking biologic analysis of the compost.	The swine farmer is looking for resources to undertake the biologic analysis of the compost; currently barriers, such as prices, hinder this possibility	The biologic analysis is undertaken sporadically, though it presents irregularities regarding the patterns recommended by Public Health Agencies.	The biologic analysis is undertaken periodically, but the parameters analyzed do not accomplish Public Health Official Standards all the time.	The biologic analysis is undertaken periodically and the parameters analyzed accomplish Public Health Official Standards all the.	In addition to the last item, the analysis results are available for the public.
Index: 1 (one)					

5. Diseases Agents: Evaluate actions undertaken in order to control diseases within the swine farm boundaries. Mechanical Control: Actions hindering the Access to diseases agents and that avoid that the agents enter the plant site through gaps in the physical structure. Chemical Control: Use of chemical products, such as anticoagulant, poison, among others. Biologic Control: Use of natural enemies of the diseases agents.					
Between the twelve swine farms, only three showed initiatives to control diseases agents, such as application of poison to kill mice and flies.					
There is no concern regarding the control of diseases agents.	The swine farmer is trying to overcome barriers to undertake control of diseases agents (i.e. obtaining financial resources).	There are some initiatives to control diseases agents, though they are not sufficient; since presence of diseases agents was observed.	The control of diseases agents includes one of the following actions: mechanical, chemical or biologic.	The diseases agents control uses at least two kinds of actions: mechanical, chemical and biologic.	There is a structured program for controlling diseases agents, with Performance Indicators and/or Monitoring Plan.
Index: 1.5 (one-point-five)					

6. Health and Safety Practices: Evaluates health and safety practices adopted in the swine farm.					
Just one of the producers has a Prevention Program Risk and a Program of Occupational Health in the swine farm. All the producers have actions to promote hygiene in the swine farm (since most of them follow requirement of the integrators). However, in relation to the safety practices, it was observed that the safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw).					
Safety equipments are not available. There are no hygiene and health practices regarding the swine unit.	Safety equipments are not available OR there are no hygiene and health practices regarding the swine unit.	The safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw). AND there are few actions geared towards Hygiene OR Health issues in the swine unit.	The safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw). AND there are few actions geared towards Hygiene AND Health issues in the swine unit.	The swine unit undertakes a program for disinfection and cleaning in order to guarantee a healthy environment OR all the safety equipments are available and are used correctly.	The swine unit undertakes a program for disinfection and cleaning in order to guarantee a healthy environment AND all the safety equipments are available and are used correctly.
Index: 2.33 (two-point-thirty-three)					

3.3. Financial Resource

7. Number of animals: Evaluates the control of the swine unit regarding amount of animals and if this amount is increasing or decreasing during the Project cycle.					
Among the twelve swine farms, eight of them remained with the same number of animals as described in the VCS PD. Three project developers had a decrease in the swine number because the project obligates the producers to comply with the limits established by the operational license. The producers have expectation that with the correct swine waste management it will be possible to increase the number of pigs allowed by the operational license.					
There is no control of the amount of animals in the swine farm.	There was a significant decrease in the number of animals.	There was an insignificant decrease in the number of animals.	Amount of animals is the same as project baseline.	The amount of animals increased insignificantly after the project implementation.	The amount of animals increased significantly after the Project implementation.
Index: 3.66 (three-point-sixty-six)					

8. Generation and commercialization of the compost: Evaluates the amount of compost generated as well as its commercialization by the farmer.
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Among the twelve swine farms:

- Three did not generate compost yet;
- Five generated compost, however it was not commercialized yet and used to the swine producers farm;
- Four generated compost and commercialized to local consumers.

It was observed that all the producers claim that there is demand for the compost; however the price is very low, so they prefer to use it in their farms. The average price of compost is R\$0.15/kg.

There was no generation of compost.	The compost generated was not commercialized, since its characteristics were not adequate.	The compost was generated but it was not commercialized due to lack of buyers, or because it was used to supply internal demand.	A part of the compost was commercialized.	More than 50% of the compost was commercialized.	In addition to last item, demand for the compost increased.
Index: 2.75 (two-point-seventy-five)					

9. Commercialization of the carbon credits: Evaluates the context of the carbon credits commercialization during the period analyzed by the report.

The first period of carbon credits of the swine farms are being verified with the current report, i.e. the project did not generate carbon credit until this moment.

During current period, no credits were commercialized.	During current period, credits were already negotiated, though no sales were concluded.	During current period, less than 50% of the credits were sold.	During the current period, more than 50% of the credits were commercialized.	During the current period, all the credits were sold.	In addition to last item, the Project has its future credits already in process of negotiation.
Index: 1 (one)					

3.4. Natural Resource

10. Environmental Management: Evaluates procedures for environmental management adopted by the swine farmer, including the organization and coordination of actions and documents regarding the swine activities: nutrition, water use, installations, energy and use of the waste for other activities.

None of the swine farms have an environmental management system. The majority of producers have just two or three actions regarding environmental management, the main actions carried are feed and energy control and correct waste disposal. It is observed that these actions are carried on by the producers as a requirement of the integrators.

None of the environmental	Less than 50% of the	More than 50% of the	There is a management	There is an environmental	There is an environmental
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aspects of the swine farm are considered in the management plan.	environmental aspects of the swine farm are considered through the implementation of some actions, but with no documentation.	environmental aspects of the swine farm are considered through the implementation of some actions, but with no documentation.	system, though it is difficult to implement the actions.	management system efficient with periodic reports.	management system certified by third part.
Index: 2.25 (two-point-twenty-five)					

11. Environmental Legislation: Evaluates if the swine farm is in accordance with Brazilian environmental standards and legislation (Ex: Operational License, Forestry Legislation Requirements, etc)					
All the swine farms have operational license, however they face difficulties to accomplish the constraints. It was also observed that all the producers face difficulties to accomplish the Forestry Code.					
The entrepreneur is not aware of the Brazilian environmental legislation.	The entrepreneur is aware of his legal duties, though he has no License, or the License was suspended since the demands were not accomplished.	During the period analyzed, the swine farm needs to accomplish a Term for Conduct Adjustment (in Portuguese, TAC); this means that the farm has some pre-defined deadline for accomplishing the environmental legislation.	There is an environmental license, though the entrepreneur faces difficulties to accomplish the demands. The License does not accomplish, temporarily, the demands.	There is an environmental license and all the demands are accomplished, though the entrepreneur faces difficulties to accomplish other Brazilian legislations (i.e. forest code).	The swine farmer accomplishes all Brazilian environmental rules and legislation.
Index: 4 (four)					

12. Chemical and Physical Analysis of the Compost: Evaluates if, during the period analyzed, chemical and physical analysis of the compost were undertaken.					
Between all the swine farms, just one did physical and chemical analysis of the compost. Three producers showed interest in conducting an analysis of the compost in the future.					
There is no concern in regard with chemical and physical analysis of the compost.	The swine farmer faces difficulties to obtain resources to undertake chemical and physical analysis of the compost. The farmer is looking for possible	Either a chemical or a physical analysis of the compost is undertaken.	Chemical and Physical Analysis of the compost are undertaken sporadically.	Physical and Chemical analysis of the compost are undertaken periodically.	In addition to this, information regarding chemical and physical parameters analyzed are available to the public.

	alternatives.				
Index: 1.5 (one-point-fifty)					

3.5. Technology Resource

13. Compost quality: Evaluates the level of dry matter, the concentration of nutrients (C, N, P2O5, K2O, Ca e Mg), and the presence of heavy metal; and if these parameters are adequate for maintenance of soil, water and vegetation quality.					
The compost is considered an organic fertilizer mixed of Classe “A”, which means an organic fertilizer from an animal or vegetal source without the use of toxic material, resulting in a product of safe use in agriculture. In the Chapter III and Annex III (page 15) of the Normative Instruction of Ministry of Agriculture, Livestock and Supply there is specifications about the physical and chemical characteristics of the compost. Among all the twelve swine producers, just one evaluated the compost quality. It was possible to observe that the compost is not in accordance with the specifications. Nine producers tested the compost generated in their own crops and state that the result was positive. The remaining swine producers did not assess the compost quality.					
The quality of the compost was never assessed.	The quality of the compost was not assessed by laboratorial tests, however it was tested in crops and it was positive.	The compost is not in accordance with the specifications of water levels and levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	The compost is not in accordance with the specifications of water levels OR levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	The compost is in accordance with the specifications of water levels AND levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	In addition to this, information regarding quality of compost is available to the public.
Index: 1.91 (one-point-ninety-one)					

14. Maintenance of the composting site: Evaluates if the maintenance of the composting site (Mechanic and Automatic Composting Unit) is carried out periodically, even by the swine farmer or by an independent Company.					
Six producers stated that they have no difficulty in carrying out maintenance of the composting site, and sporadically the maintenance is carried out by a specialized company. The remaining producers claim that they have difficulty in carrying out maintenance of the composting site because requires a lot of control.					
It was not observed maintenance practices in the composting site.	The swine farmer carries on practices towards the maintenance of the composting site, though he faces difficulties, for instance: bad smell due to lack of water or	The swine farmer carries on practices towards maintenance of the composting site, with no difficulties.	The swine farmer carries on practices towards maintenance of the composting site, and sporadically, the maintenance is made by a specialized	The maintenance of the composting site is made regularly by a specialized Company.	In addition to last scenario, the equipments are calibrated according to established deadlines.

	problems during aeration.		company.		
Index: 3.50 (three-point-fifty)					

15. Technology Diffusion: Evaluates the contribution of the project for technology diffusion, which comprises knowledge diffusion and implementation of new Technologies.					
The majority of the swine producers just explained informally the composting technology to neighborhoods and friends. Just one farmer has a pamphlet containing brief information about the project and the use of the compost, which is distributed when the compost is sold.					
The swine farmer is not committed with technology diffusion.	The swine farmer would commit to support technology diffusion, though he is not aware which procedures should be undertaken.	The technology diffusion approaches are informal.	Project contributes for technology diffusion through knowledge transfer, through formal methods.	Besides contributing with knowledge transfer, it also contributes for technology diffusion through the implementation of Technologies which differs from baseline scenario.	In addition to previous scenario, the project contributes for the technical capacitating and implementation and operation of these technologies.
Index: 2.91 (two-point-ninety-one)					

3.6. Carbon Resource

16. Project Performance: Evaluates the Project performance analyzed by the corresponding Monitoring Report in comparison with the emission reductions estimated by the PD.					
Comparing the estimative from VCS PD and the 1° Monitoring period, it is possible to affirm that the performance of the project was: - 2011: The performance was great, it was reduced 88% of the emission reductions estimated; - 2012: The performance was reasonable, it was reduced 63% of the emission reductions estimated. The main reasons for the generation of carbon credits have been smaller than expected are: - One swine farmer (Adelmo Pickler) for personal reasons is not included in this current credit period; - Documents missing.					
0% of emission reductions were verified.	Very Low. From 1 to 25% of the emission reductions during the period were verified.	Low. From 26 to 50% of the emission reductions of the period were verified.	Reasonable. From 51 to 75% the emission reductions of the period were verified.	Great. From 76 to 95% of the emission reductions of the period were verified.	Excellent. More than 95% of emission reductions were verified.
Index: 4 (four)					

17. Stakeholders Consultation: Evaluates if stakeholders were informed and consulted regarding Project activity and its impacts, during the period analyzed.					
Letters were sent in the name of all the swine farms involved with the carbon project to local governments, secretariat, cooperatives, corporations, among others.					
Stakeholders are not aware of the project activities.	Stakeholders were informally communicated, though they did not have access to send comments and suggestions for the project developers.	Stakeholders were communicated through formal letters, and they had opportunity to send comments and suggestions to the Project developers.	In addition to the letters, other methods were carried out for engaging stakeholders, such as lectures, group activities, and others.	In addition to previous scenario, the project provides permanent channels for stakeholder's consultation.	There are evidences that the stakeholder's 'suggestions and comments were considered and realized by the project developer.
Index: 3 (three)					

18. Validation and Verification: Evaluates if the Project was partially or totally validated/verified by a third part and if the third part is accredited by the UNFCCC, as well as if the national and international Standards are being					
The Santa Catarina Composting project was validated and it is being verified at the moment by a DOE.					
The Project was not validated/verified by a third part.	Only some aspects of the Project were validated/verified.	The Project was validated/verified by a third part, which is not accredited to UNFCCC.	The Project was validated by a third part, but it is registered in more than one GHG Program.	The validation and verification are made by a DOE, accredited by the UNFCCC.	The validation and verification are made by DOE, using methods and procedures recognized internationally.
Index: 6 (six)					

4. Analysis of results

To analyze the situation of the project, it is important to consider what is represented by the score obtained for each of the resources. The indicators are established to express the following relationship between the scores obtained and the situation of the project:

Scores 1 and 2:

Situation: Critical.

Characteristics: existence of irregularities; high socio-environmental risk; significant levels of social and environmental degradation; or situation of extreme hardship, which significantly compromises the quality of life of the population.

Scores 3 and 4:

Situation: Satisfactory

Characteristics: meets all the legal requirements relating to its activities; surpass them through the adoption of good practices and voluntary actions in some cases; or a quality of life that reaches the minimum acceptable standard, but which requires improvement.

Scores 5 and 6:

Situation: Sustainable.

Characteristics: exceeds its legal obligations and/or common practice in the market, in many cases adopting the best-possible practices for the sector; or communities have reached a sustainable livelihood, with adequate access to material and social goods, are capable of recovering independently from situations of stress, and are not causing the deterioration of basic environmental resources through their activities.

In order to obtain an analysis of the Resources average, an equal distribution is adopted between the decimal intervals from 1 to 6, expressing the following relationship amongst the indexes obtained and the project performance.

Average index obtained for the Resource	Decimal interval	Situation
Interval from 1 to 2,6	1,7	Critical
Interval from 2,7 to 4,3	1,7	Satisfactory
Interval from 4,4 to 6	1,7	Sustainable

4.1. General performance

The general performance was considered “satisfactory”, with a score of 3.0 based on the resources score as indicated in the following table (Table 3).

As highlighted by the Table below, the “critical” and “satisfactory” performances correspond to 77%, showing that the producers have a lot to invest in the development of the swine farm.

It was observed that the majority of the swine farmers are satisfied with the composting activity especially due to the technology be a solution to the swine waste and reduce the environmental impacts. The project will result not only in GHG emission reduction, but also in other environmental benefits, such as contribution to local environmental sustainability due to:

- Monitor the compliance of the Brazilian environmental legislation
- Reduction in the risk of underground water contamination due to correct management of swine manure.
- Reduction in the odors arising from open anaerobic lagoons.
- Reduction in the pathogenic vectors associated to animal manure.
- Improvement of swine manure quality as fertilizer.

Also, the project will generate social benefits, such as:

- Increase of job opportunities during and post project activity due to the continuous need for equipment monitoring and workforce improvement.
- Improvement on working conditions to farms personnel, due to odor and pathogenic vectors reduction.
- Employees’ professional skill development (training) to operate the installed composting technology.
- Technological development of the region through the implementation of innovative equipment.

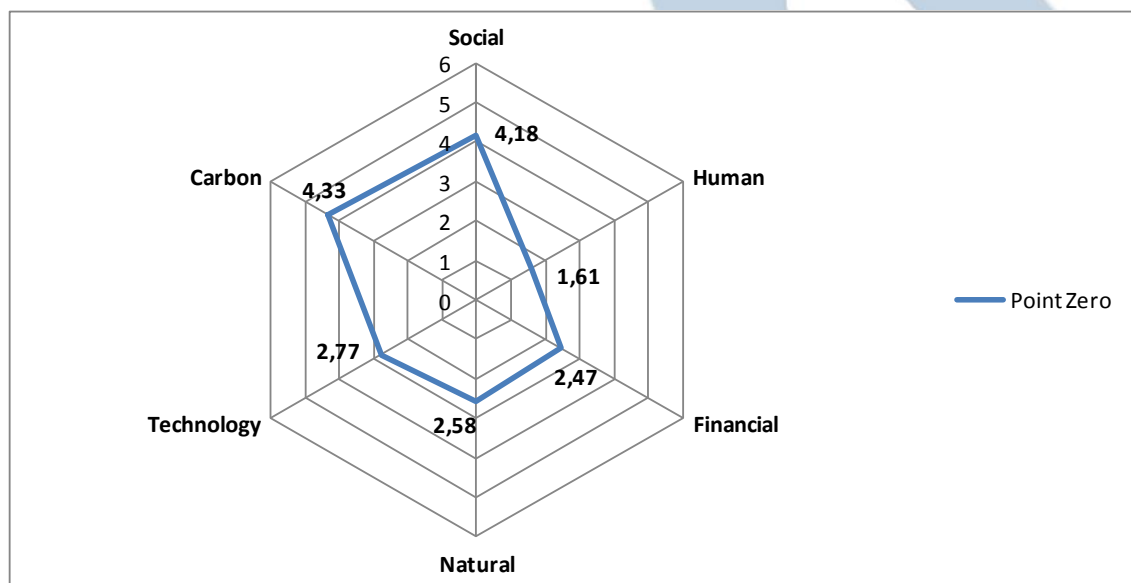
By the application of the methodology it was possible to observe that the producers believe that animal manure will be an important income source for the swine farm. However, all the producers claim that the price of compost is very low, so they currently prefer to use it in their farms. The average price of compost is BRL 0.15/kg. Also, they have positive expectations in relation to the financial return of the carbon credits. Also, the producers have expectations that with the correct swine waste management it will be possible to increase the number of pigs allowed by the operational license.

All the benefits above are in line with the farmer’s goals to improve the quality of the operation and to act in a positive manner towards the community. According to the project participants, the project is an opportunity to adopt sustainable practices and provide guidelines for future swine confinement farms.

Table 3 - Sustainability Performance - Point 0 - 2012

Performance by Resource					
Resources	Critical	Satisfactory	Sustainable	Average	Performance
Social	0.0%	33.3%	66.7%	4.18	Sustainable
Human	100.0%	0.0%	0.0%	1.66	Critical
Financial	66.7%	33.3%	0.0%	2.47	Critical
Natural	66.7%	33.3%	0.0%	2.58	Critical
Technology	33.3%	33.3%	33.3%	2.77	Critical
Carbon	0.0%	66.7%	33.3%	4.33	Sustainable
General	44%	33%	22%	3.00	Satisfactory

Figure 2 - Sustainability Analysis - Point Zero



5. Table of Results

Annex 1- Results Sheet related to the period of 2012

Social Resource			Human Resource		
Indicators	Score	Analysis	Indicators	Score	Analysis
1 Association and Cooperatives	4,33	SU	4 Control of microorganisms	1,00	C
2 Economic Dependency	4,45	SU	5 Diseases Agents	1,50	C
3 Farmer Satisfaction	3,75	SA	6 Health and Safety Practices	2,33	C
Average	4,18	SU	Average	1,61	C
Indicators evaluated	3		Indicators evaluated	3	
C Critical	0	0,0%	C Critical	3	100,0%
SA Satisfactory	1	33,3%	SA Satisfactory	0	0,0%
SU Sustainable	2	66,7%	SU Sustainable	0	0,0%
Financial Resource			Natural Resource		
Indicators	Score	Analysis	Indicators	Score	Analysis
7 Number of animals	3,66	SA	10 Environmental Management	2,25	C
8 Generation and Commercialization of the compost	2,75	C	11 Environmental Legislation	4,00	SA
9 Commercialization of the carbon credits	1,00	C	12 Chemical and Physical analyses of the	1,50	C
Average	2,47	C	Average	2,58	C
Indicators evaluated	3		Indicators evaluated	3	
C Critical	2	66,7%	C Critical	2	66,7%
SA Satisfactory	1	33,3%	SA Satisfactory	1	33,3%
SU Sustainable	0	0,0%	SU Sustainable	0	0,0%
Technology Resource			Carbon Resource		
Indicators	Score	Analysis	Indicators	Score	Analysis
13 Quality of the compost	1,91	SU	16 Project Performance	4,00	SA
14 Maintenance of the composting site	3,50	C	17 Stakeholders Consultation	3,00	SA
15 Technology Diffusion	2,91	SA	18 Validation and Verification	6,00	SU
Average	2,77	C	Average	4,33	SU
Indicators evaluated	3		Indicators evaluated	3	
C Critical	1	33,3%	C Critical	0	0,0%
SA Satisfactory	1	33,3%	SA Satisfactory	2	66,7%
SU Sustainable	1	33,3%	SU Sustainable	1	33,3%

6. Swine Farms Pictures

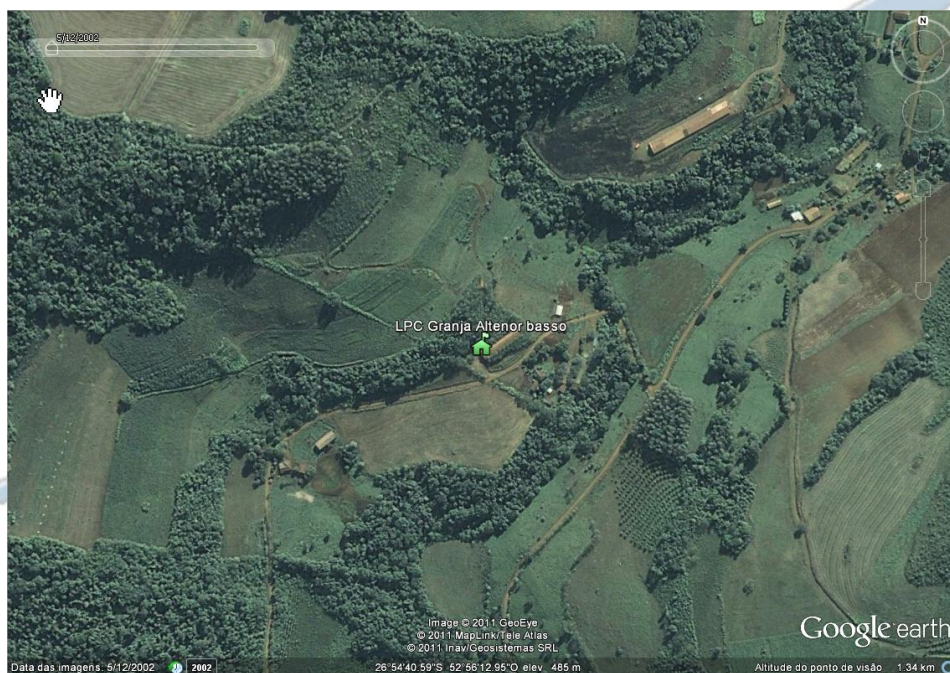
Picture 1. Mr. Piovesan and his family, swine producer included in the project



Picture 3. UMAC installation in Ramella's swine farm



Picture 4. Google Earth view of Basso's swine farm



Picture 5. Secco's swine farm

